UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Engineering
and
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Cooperating

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AN ICE-CHILLED MEAT-CURING BOX FOR FARM USE
Describes Drawing No. 2709

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This box has been designed primarily for curing meat on southern farms. It can be adapted for holding fish, milk, ice, and other products which are unaffected by high humidity, when commercial cold storage is not accessible or desired.

Tests have shown that an inside temperature of 36°F. can be readily secured and maintained when the outside temperature is between 70 and 80°F.

Note that entrance is by means of a hinged lid which may necessitate climbing into the box for filing or icing. This type of structure, though less convenient than the walk-in boxes with overhead or side bunkers, has been selected because:

1. It is lower in cost.
2. Inexperienced workmen can build it.
3. Most of the materials are readily available.
4. Ice consumption is less.
5. Desirable temperatures below 40°F. cannot be obtained in overhead boxes with the use of ice alone.

As shown, the box has a capacity of from 1,800 to 2,000 pounds of meat and 1,600 pounds of ice. The length and height may be increased or lessened to meat local needs but the width shown should not be increased. It can be adapted for community use if built 9 or 12 feet long thus providing for the curing meat from about twenty-five or thirty-five 200-pound hogs respectively.

The materials used were selected for their efficiency, ease of placing, and permanence. Different kinds and a smaller quantity of insulation might possibly be used for very temporary boxes. Cork should be placed in the floor because of its resistance to dampness.

Construction

In building, the following points should be observed:

1. Mix concrete in the proportions of 1 part Portland cement, 2 parts sand, and 4 parts gravel, all measured by volume. (When built on an existing concrete floor the lower 4-inch slab is not needed).

2. The cork should be bedded in a layer of hot asphalt floated on the concrete floor and sealed on top and outside edges with this material. Fit each cork board tightly against the sides of the box and adjacent cork boards. Do not put hot asphalt between the joints of the cork board.

3. Anchor the lower 2 x 4's and 2 x 8's to the concrete with bolts or 30-penny nails.

4. Stagger the corner joints of the crib work and paint the top and ends of each 2 x 4 before spiking the next one in place to secure tight joints and to protect the lumber from dampness.

5. Dry the sawdust thoroughly in the sun or an oven before using to obtain its full insulating value, as most sawdust is damp. Use waterproof (tar) paper on both sides of the insulated spaces as shown on attached drawing.

6. Make top of box as flat as possible so the lid will fit closely. Probably a lighter weight top could replace the more efficient insulated one shown on the drawing.

7. Solder the galvanized metal bottom at joints and to the drain and also to the lower part of the sides. The upper portion of the sides could be lapped and nailed to the crib work; however, soldering gives greater protection to the insulation. If feasible, float hot asphalt over concrete floor just prior to laying the metal bottom, thus securing an unyielding base for the metal.

8. The meat rack has been made 1 inch shorter than the inside length of the box to permit easy removal in case other products are to be stored.

9. Locate the drain to permit cleaning, to provide a water seal, and to prevent accumulation of drippings around the box.

Curing Pork.

1. Freshly slaughtered carcasses should be promptly chilled to a temperature of about 36°F. Although this can be accomplished in the box by using racks or 2 x 4's to separate the cuts, thus facilitating air circulation, this method is slow and sometimes uncertain. It is safer practice to chill the meat in outside air if possible or to immerse the rough cuts in barrels containing iced weak brine. By shifting the chilling meat frequently in the brine and adding more ice, when necessary, a temperature of 36°F. should be secured within 24 hours or less. The time required will depend upon the temperature maintained and size of cuts.

2. When thoroughly chilled the rough cuts are trimmed, salted, placed in the meat rack, and fitted closely together so as to take a minimum of space. Do not attempt to jam them together and force them out of shape.

3. When being overhauled (resalted) the curing meat should be removed from the rack, resalted as desired, and fitted again into the rack. Bacon, loins, spare ribs, etc., that are to be given a mild cure should be kept on top so they can be removed without disturbing the heavy cuts.

Icing.

1. It is desirable to ice the box the day before the meat is put in.

2. The spaces between the meat rack, side walls, and lid are wide enough to receive a standard 11-inch cake of ice. If the ice is broken up into rough chunks more surface will be exposed to the air thus speeding up the chilling.

3. Ice should be placed on the metal cover above the meat as well as in the side compartments.

4. Ice should be added so as to hold a temperature between 36° and 40°F.; 38° is the ideal at which to aim. Under ordinary conditions reicing should not be necessary oftener than once a week.

5. Care should be taken to see that the drain pipe does not become clogged and thereby cause flooding of the packed meat.